

Chan, Sing

From: PLUS
Sent: Wednesday, May 11, 2005 1:54 PM
To: Chan, Sing
Subject: PLUS Results for 10605602

Here are the PLUS search results for 10605602.

This search was prepared by the staff of the Scientific and Technical Information Center, SIRA. If you have questions or comments about this search, please reply via email to PLUS@uspto.gov.



10605602_Q
UAL.txt



10605602_LI
ST.txt



10605602_W
EST.txt



10605602_E
AST.txt



10605602.ea
st



10605602_C
LS.txt



10605602_C
LSTILES.txt



10605602_W
DS.txt

STIC SEARCH HISTORY

CHAN 10/605,602

Page 1

? show files

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 File 2:INSPEC 1969-2005/May W2
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 File 347:JAPIO Nov 1976-2005/Jan(Updated 050506)
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 File 350:Derwent WPIX 1963-2005/UD,UM &UP=200531
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? ds

Set	Items	Description
S1	53377	HEATSINK? OR HEAT?(2N)SINK?
S2	5550	S1(3N) (ATTACH? OR FASTEN? OR AFFIX? OR CONNECT? OR JOIN? OR LINK? OR COUPL?)
S3	2649	S1(3N) (ADHESI? OR ADHERE? OR ADHERING? ? OR STICK? OR CLING? OR BOND? OR CEMENT? OR GLUE? OR GLUING? ? OR HOLD? OR GRIP? OR GRASP? OR BIND? OR GUM? OR CONGLUTIN? OR AGGLUTIN? OR MUCILAG? OR TACK? OR PASTE? ? OR PASTING? ?)
S4	13589	(STIFF? OR RIGID? OR INFLEX? OR UNFLEX? OR UNBEND? OR INELASTIC? OR UNELASTIC? OR NONELASTIC?) (2N) (RING? OR COLLAR? OR BAND OR BANDS OR BANDED OR BANDING? ? OR ANNULUS OR ANNULI OR LOOP? OR HOOP? OR ANNULET? OR ROUNDLET?)
S5	154	(INEXTENS? OR UNEXTENS? OR NONEXTENS? OR INDUCTIL? OR UNDUCTIL? OR NONDUCTIL?) (2N) (RING? OR COLLAR? OR BAND OR BANDS OR BANDED OR BANDING? ? OR ANNULUS OR ANNULI OR LOOP? OR HOOP? OR ANNULET? OR ROUNDLET?)
S6	135269	(CHIP OR CHIPS OR DIE OR DIES OR WAFER? OR DISK? OR DISC? ? OR SEMICOND? OR SEMI(N) (COND? ? OR CONDUCT?) OR IC OR ICS OR I(W)C OR CIRCUIT? OR VLSI? OR ELEC OR ELECTRONIC?) (2N) (PACKAG?

OR PKG? ?)

S7 2 S1 AND (S4 OR S5) AND S6
S8 1 S7 AND S3
S9 6 S1 AND (S4 OR S5)
S10 3 S9 AND S3
S11 3466869 RING? OR COLLAR? OR BAND OR BANDS OR BANDED OR BANDING? ? -
OR ANNULUS OR ANNULI OR LOOP? OR HOOP? OR ANNULET? OR ROUNDEL-
T?

S12 2814 S1 AND S11
S13 181 S12 AND S6
S14 42 S13 AND (S2 OR S3)
S15 382403 PROTRUD? OR PROTRUS?
S16 2 S14 AND S15
S17 6 S7 OR S8 OR S9 OR S10 OR S16
S18 40 S14 NOT S17
S19 5 RD S17 (unique items)
S20 39 RD S18 (unique items)

? t s19/7,de/1

19/7,DE/1 (Item 1 from file: 104)
DIALOG(R)File 104:AeroBase
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0000630966

TITLE: Thermal Strap Increases Cryocooling Efficiency

AUTHORS:

Ross, Ronald G. Jr.,
Johnson, Dean L.,
Green, Kenneth E.,
PUBLICATION DATE: Nov 1, 1995

LANGUAGE: English

ORIG REPORT NO: NPO-19395
IP ACCESS NO: 95B10612
IP DOCUMENT ID: 19950070433

AVAILABILITY INFORMATION:

FORMAT/PRICE CODE: No Digital Version Available - Order This Document,

ABSTRACT:

Report discusses concept for decreasing compressor power consumed by spacecraft mechanical cryocooler providing 0.5 W of refrigeration at temperature of 61 K at tip of cold finger. Involves connecting thermal

10605602_CLSTITLES
Titles of Most Frequently Occurring Classifications of Patents Returned
From A Search of 10605602 on May 11, 2005

- 12 257/706 (1 OR, 11 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/688 .With large area flexible electrodes in press
chip contact with opposite sides of active semiconductor
and surrounded by an insulating element, e.g., ring
257/701 .Insulating material
257/706 ..With heat sink
- 12 257/712 (7 OR, 5 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/688 .With large area flexible electrodes in press
contact with opposite sides of active semiconductor chip
and surrounded by an insulating element, e.g., ring
257/712 .With provision for cooling the housing or its
contents
- 11 361/704 (6 OR, 5 XR)
Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES
361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE
ELECTRICAL COMPONENTS
361/679 .For electronic systems and devices
361/688 ..With cooling means
361/704 ...Thermal conduction
- 10 257/E23.092 (0 OR, 10 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/E23.079 ..For integrated circuit devices, e.g., power
bus, number of leads (EPO)
257/E23.08 .Arrangements for cooling, heating, ventilating
or temperature compensation; temperature-sensing
arrangements (EPO)
257/E23.087 ..Fillings or auxiliary members in containers
or encapsulations selected or arranged to facilitate
heating or cooling (EPO)
257/E23.09 ...Auxiliary members in containers
characterized by their shape, e.g., pistons (EPO)
257/E23.092Auxiliary members in encapsulations (EPO)
- 9 257/778 (1 OR, 8 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/734 COMBINED WITH ELECTRICAL CONTACT OR LEAD
257/778 .Flip chip
- 8 257/717 (1 OR, 7 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/688 .With large area flexible electrodes in press
chip contact with opposite sides of active semiconductor
and surrounded by an insulating element, e.g., ring
257/712 .With provision for cooling the housing or its
contents
257/717 ..Isolation of cooling means (e.g., heat sink)
by an electrically insulating element (e.g., spacer)
- 6 165/185 (0 OR, 6 XR)
Class 165 : HEAT EXCHANGE

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165/185

HEAT TRANSMITTER

6 257/707 (0 OR, 6 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES

257/688 .With large area flexible electrodes in press
contact with opposite sides of active semiconductor

chip

and surrounded by an insulating element, e.g., ring

257/701 .Insulating material

257/706 ..With heat sink

257/707 ...Directly attached to semiconductor device

6 257/E23.101 (0 OR, 6 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES

257/E23.079 ..For integrated circuit devices, e.g., power
bus, number of leads (EPO)257/E23.08 .Arrangements for cooling, heating, ventilating
or temperature compensation; temperature-sensing
arrangements (EPO)257/E23.101 ..selection of materials, or shaping, to
facilitate cooling or heating, e.g., heat sinks (EPO)

5 165/80.3 (0 OR, 5 XR)

Class 165 : HEAT EXCHANGE

165/80.1 WITH RETAINER FOR REMOVABLE ARTICLE

165/80.2 .Electrical component

165/80.3 ..Air cooled, including fins

5 174/16.3 (0 OR, 5 XR)

Class 174 : ELECTRICITY: CONDUCTORS AND INSULATORS

174/8 WITH FLUIDS OR VACUUM

174/15.1 .With cooling or fluid feeding, circulating or
distributing

174/16.1 ..By ventilation or gas circulation

174/16.3 ...With heat sink

5 257/713 (0 OR, 5 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES

257/688 .With large area flexible electrodes in press
contact with opposite sides of active semiconductor

chip

and surrounded by an insulating element, e.g., ring
257/712 .With provision for cooling the housing or its
contents

257/713 ..For integrated circuit

5 257/718 (0 OR, 5 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES

257/688 .With large area flexible electrodes in press
contact with opposite sides of active semiconductor

chip

and surrounded by an insulating element, e.g., ring
257/712 .With provision for cooling the housing or its
contents257/718 ..Heat dissipating element held in place by
clamping or spring means

5 257/720 (0 OR, 5 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES

257/688 .With large area flexible electrodes in press
contact with opposite sides of active semiconductor

chip

and surrounded by an insulating element, e.g., ring

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- 257/712 .With provision for cooling the housing or its contents
- 257/720 ...Heat dissipating element has high thermal conductivity insert (e.g., copper slug in aluminum heat sink)
- 5 257/E23.055 (0 OR, 5 XR)
 Class 257 : ACTIVE SOLID-STATE DEVICES
 257/E23.001 PACKAGING, INTERCONNECTS, AND MARKINGS FOR SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES (EPO)
 257/E23.01 .Arrangements for conducting electric current to or from solid-state body in operation, e.g., leads, terminal arrangements (EPO)
 257/E23.023 ...Consisting of soldered or bonded constructions (EPO)
 257/E23.031 ...Lead frames or other flat leads (EPO)
 257/E23.055Consisting of thin flexible metallic tape with or without film carrier (EPO)
- 5 257/E23.069 (0 OR, 5 XR)
 Class 257 : ACTIVE SOLID-STATE DEVICES
 257/E23.001 PACKAGING, INTERCONNECTS, AND MARKINGS FOR SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES (EPO)
 257/E23.01 .Arrangements for conducting electric current to or from solid-state body in operation, e.g., leads, terminal arrangements (EPO)
 257/E23.023 ...Consisting of soldered or bonded constructions (EPO)
 257/E23.06 ...Leads, i.e., metallizations or lead frames on insulating substrates, e.g., chip carriers (EPO)
 257/E23.068Additional leads joined to metallizations on insulating substrate, e.g., pins, bumps, wires, flat leads (EPO)
 257/E23.069Spherical bumps on substrate for external connection, e.g., ball grid arrays (BGA) (EPO)
- 5 361/719 (3 OR, 2 XR)
 Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES
 361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE ELECTRICAL COMPONENTS
 361/679 .For electronic systems and devices
 361/688 ..With cooling means
 361/704 ...Thermal conduction
 361/717For active solid state devices
 361/718For integrated circuit
 361/719Circuit board mounted
- 4 257/704 (2 OR, 2 XR)
 Class 257 : ACTIVE SOLID-STATE DEVICES
 257/688 .With large area flexible electrodes in press contact with opposite sides of active semiconductor chip and surrounded by an insulating element, e.g., ring
 257/701 .Insulating material
 257/704 ..Cap or lid
- 4 257/719 (0 OR, 4 XR)
 Class 257 : ACTIVE SOLID-STATE DEVICES
 257/688 .With large area flexible electrodes in press contact with opposite sides of active semiconductor chip

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- 257/712 and surrounded by an insulating element, e.g., ring
..With provision for cooling the housing or its contents
- 257/718 ..Heat dissipating element held in place by clamping or spring means
- 257/719 ...Pressed against semiconductor element
- 4 257/737 (0 OR, 4 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/734 COMBINED WITH ELECTRICAL CONTACT OR LEAD
257/737 .Bump leads
- 4 257/787 (1 OR, 3 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/787 ENCAPSULATED
- 4 257/796 (1 OR, 3 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/787 ENCAPSULATED
257/796 .With heat sink embedded in encapsulant
- 4 257/E23.086 (0 OR, 4 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/E23.079 ..For integrated circuit devices, e.g., power bus, number of leads (EPO)
257/E23.08 .Arrangements for cooling, heating, ventilating or temperature compensation; temperature-sensing arrangements (EPO)
257/E23.083 ..Mountings or securing means for detachable cooling or heating arrangements; fixed by friction, plugs
or springs (EPO)
257/E23.086 ...Snap-on arrangements, e.g., clips (EPO)
- 4 257/E23.104 (0 OR, 4 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/E23.079 ..For integrated circuit devices, e.g., power bus, number of leads (EPO)
257/E23.08 .Arrangements for cooling, heating, ventilating or temperature compensation; temperature-sensing arrangements (EPO)
257/E23.101 ..Selection of materials, or shaping, to facilitate cooling or heating, e.g., heat sinks (EPO)
257/E23.102 ...Cooling facilitated by shape of device (EPO)
257/E23.104Characterized by shape of housing (EPO)
- 4 257/E23.106 (0 OR, 4 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/E23.079 ..For integrated circuit devices, e.g., power bus, number of leads (EPO)
257/E23.08 .Arrangements for cooling, heating, ventilating or temperature compensation; temperature-sensing arrangements (EPO)
257/E23.101 ..Selection of materials, or shaping, to facilitate cooling or heating, e.g., heat sinks (EPO)
257/E23.106 ...Laminates or multilayers, e.g., direct bond copper ceramic substrates (EPO)
- 4 257/E23.135 (0 OR, 4 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/E23.113Ceramic materials or glass (EPO)
257/E23.135 .Fillings or auxiliary members in containers or

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encapsulations, e.g., centering rings (EPO)

- 4 361/707 (0 OR, 4 XR)
 Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES
 - 361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE ELECTRICAL COMPONENTS
 - 361/679 .For electronic systems and devices
 - 361/688 ..With cooling means
 - 361/704 ...Thermal conduction
 - 361/707Through support means

- 4 438/121 (1 OR, 3 XR)
 Class 438 : SEMICONDUCTOR DEVICE MANUFACTURING: PROCESS
 - 438/106 PACKAGING (E.G., WITH MOUNTING, ENCAPSULATING, ETC.) OR TREATMENT OF PACKAGED SEMICONDUCTOR
 - 438/121 .Metallic housing or support

- 4 438/123 (1 OR, 3 XR)
 Class 438 : SEMICONDUCTOR DEVICE MANUFACTURING: PROCESS
 - 438/106 PACKAGING (E.G., WITH MOUNTING, ENCAPSULATING, ETC.) OR TREATMENT OF PACKAGED SEMICONDUCTOR
 - 438/121 .Metallic housing or support
 - 438/123 ..Lead frame

- 3 174/52.4 (2 OR, 1 XR)
 Class 174 : ELECTRICITY: CONDUCTORS AND INSULATORS
 - 174/50 BOXES AND HOUSINGS
 - 174/52.1 .With electric device or mounting means therefor
 - 174/52.3 ..Sealed
 - 174/52.4 ...Flat housing for electronic device (e.g., flat pack, dual-in-line package)

- 3 257/668 (0 OR, 3 XR)
 Class 257 : ACTIVE SOLID-STATE DEVICES
 - 257/666 LEAD FRAME
 - 257/668 .On insulating carrier other than a printed circuit board

- 3 257/675 (2 OR, 1 XR)
 Class 257 : ACTIVE SOLID-STATE DEVICES
 - 257/666 LEAD FRAME
 - 257/675 .With heat sink means

- 3 257/714 (0 OR, 3 XR)
 Class 257 : ACTIVE SOLID-STATE DEVICES
 - 257/688 .With large area flexible electrodes in press contact with opposite sides of active semiconductor chip and surrounded by an insulating element, e.g., ring
 - 257/712 .With provision for cooling the housing or its contents
 - 257/714 ..Liquid coolant

- 3 257/723 (0 OR, 3 XR)
 Class 257 : ACTIVE SOLID-STATE DEVICES
 - 257/688 .With large area flexible electrodes in press contact with opposite sides of active semiconductor chip and surrounded by an insulating element, e.g., ring
 - 257/723 .For plural devices

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- 3 257/727 (1 OR, 2 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/688 .With large area flexible electrodes in press
contact with opposite sides of active semiconductor chip
and surrounded by an insulating element, e.g., ring
257/727 .Device held in place by clamping
- 3 257/E21.504 (0 OR, 3 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/E21.001 PROCESSES OR APPARATUS ADAPTED FOR MANUFACTURE
OR TREATMENT OF SEMICONDUCTOR OR SOLID-STATE DEVICES
OR OF PARTS THEREOF (EPO)
257/E21.002 .Manufacture or treatment of semiconductor
device (EPO)
257/E21.04 ..Device having at least one potential-jump
barrier or surface barrier, e.g., PN junction,
depletion layer, carrier concentration layer (EPO)
257/E21.499 ...Assembling semiconductor devices, e.g.,
treatment packaging, including mounting, encapsulating, or
of packaged semiconductor (EPO)
257/E21.502Encapsulation, e.g., encapsulation layer,
coating (EPO)
257/E21.504Moulds (EPO)
- 3 257/E23.043 (0 OR, 3 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/E23.001 PACKAGING, INTERCONNECTS, AND MARKINGS FOR
SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES (EPO)
257/E23.01 .Arrangements for conducting electric current
to or from solid-state body in operation, e.g., leads,
terminal arrangements (EPO)
257/E23.023 ..Consisting of soldered or bonded
constructions (EPO)
257/E23.031 ...Lead frames or other flat leads (EPO)
257/E23.043Geometry of lead frame (EPO)
- 3 257/E23.124 (0 OR, 3 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/E23.113Ceramic materials or glass (EPO)
257/E23.116 .Encapsulations, e.g., encapsulating layers,
coatings, e.g., for protection (EPO)
257/E23.123 ..Characterized by arrangement or shape (EPO)
257/E23.124 ...Device being completely enclosed (EPO)
- 3 257/E23.14 (0 OR, 3 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/E23.113Ceramic materials or glass (EPO)
257/E23.135 .Fillings or auxiliary members in containers or
encapsulations, e.g., centering rings (EPO)
257/E23.136 ..Fillings characterized by material, its
physical or chemical properties, or its arrangement
within complete device (EPO)
257/E23.14 ...Solid or gel at normal operating temperature
of device (EPO)
- 3 257/E23.181 (0 OR, 3 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES

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- 257/E23.176 ...For flat cards, e.g., credit cards (EPO)
- 257/E23.18 .Containers; seals (EPO)
- 257/E23.181 ..Characterized by shape of container or parts,
e.g., caps, walls (EPO)
- 3 257/E23.193 (0 OR, 3 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
 - 257/E23.176 ...For flat cards, e.g., credit cards (EPO)
 - 257/E23.18 .Containers; seals (EPO)
 - 257/E23.193 ..Characterized by material or arrangement of
seals between parts, e.g., between cap and base of
container or between leads and walls of container (EPO)
- 3 361/717 (2 OR, 1 XR)
Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES
 - 361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE
ELECTRICAL COMPONENTS
 - 361/679 .For electronic systems and devices
 - 361/688 ..With cooling means
 - 361/704 ...Thermal conduction
 - 361/717For active solid state devices
- 3 439/487 (0 OR, 3 XR)
Class 439 : ELECTRICAL CONNECTORS
 - 439/485 WITH PROVISION TO DISSIPATE, REMOVE, OR BLOCK
THE FLOW OF HEAT
 - 439/487 .Distinct heat sink
- 2 165/80.2 (0 OR, 2 XR)
Class 165 : HEAT EXCHANGE
 - 165/80.1 WITH RETAINER FOR REMOVABLE ARTICLE
 - 165/80.2 .Electrical component
- 2 165/80.4 (0 OR, 2 XR)
Class 165 : HEAT EXCHANGE
 - 165/80.1 WITH RETAINER FOR REMOVABLE ARTICLE
 - 165/80.2 .Electrical component
 - 165/80.4 ..Liquid cooled
- 2 174/15.2 (0 OR, 2 XR)
Class 174 : ELECTRICITY: CONDUCTORS AND INSULATORS
 - 174/8 WITH FLUIDS OR VACUUM
 - 174/15.1 .With cooling or fluid feeding, circulating or
distributing
 - 174/15.2 ..By heat pipe
- 2 174/16.1 (0 OR, 2 XR)
Class 174 : ELECTRICITY: CONDUCTORS AND INSULATORS
 - 174/8 WITH FLUIDS OR VACUUM
 - 174/15.1 .With cooling or fluid feeding, circulating or
distributing
 - 174/16.1 ..By ventilation or gas circulation
- 2 257/673 (0 OR, 2 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
 - 257/666 LEAD FRAME
 - 257/673 .With bumps on ends of lead fingers to connect
to semiconductor
- 2 257/676 (0 OR, 2 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
 - 257/666 LEAD FRAME

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- 257/676 .With structure for mounting semiconductor chip
to lead frame (e.g., configuration of die bonding flag,
absence of a die bonding flag, recess for LED)
- 2 257/686 (2 OR, 0 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/678 HOUSING OR PACKAGE
257/685 .Multiple housings
257/686 ..Stacked arrangement
- 2 257/693 (1 OR, 1 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/688 .With large area flexible electrodes in press
contact with opposite sides of active semiconductor
chip
and surrounded by an insulating element, e.g., ring
257/690 .With contact or lead
257/692 ..With particular lead geometry
257/693 ...External connection to housing
- 2 257/722 (1 OR, 1 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/688 .With large area flexible electrodes in press
contact with opposite sides of active semiconductor
chip
and surrounded by an insulating element, e.g., ring
257/712 .With provision for cooling the housing or its
contents
257/721 ..With gas coolant
257/722 ...With fins
- 2 257/726 (0 OR, 2 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/688 .With large area flexible electrodes in press
contact with opposite sides of active semiconductor
chip
and surrounded by an insulating element, e.g., ring
257/723 .For plural devices
257/725 ..With electrical isolation means
257/726 ...Devices held in place by clamping
- 2 257/738 (0 OR, 2 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/734 COMBINED WITH ELECTRICAL CONTACT OR LEAD
257/737 .Bump leads
257/738 ..Ball shaped
- 2 257/780 (0 OR, 2 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/734 COMBINED WITH ELECTRICAL CONTACT OR LEAD
257/780 .Ball or nail head type contact, lead, or bond
- 2 257/E21.503 (0 OR, 2 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES
257/E21.001 PROCESSES OR APPARATUS ADAPTED FOR MANUFACTURE
OR TREATMENT OF SEMICONDUCTOR OR SOLID-STATE DEVICES
OR OF
PARTS THEREOF (EPO)
257/E21.002 .Manufacture or treatment of semiconductor
device (EPO)
257/E21.04 ..Device having at least one potential-jump
barrier or surface barrier, e.g., PN junction,

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depletion

257/E21.499 ...layer, carrier concentration layer (EPO)
 ...Assembling semiconductor devices, e.g.,
 packaging, including mounting, encapsulating, or

treatment

257/E21.502 ...of packaged semiconductor (EPO)
Encapsulation, e.g., encapsulation layer,
 coating (EPO)
 257/E21.503Encapsulation of active face of flip chip
 device, e.g., under filling or under encapsulation of
 flip-chip, encapsulation perform on chip or mounting
 substrate (EPO)

2 257/E23.004 (0 OR, 2 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES

257/E23.001 PACKAGING, INTERCONNECTS, AND MARKINGS FOR
 SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES (EPO)

257/E23.003 .Mountings, e.g., nondetachable insulating
 substrates (EPO)

257/E23.004 ..characterized by shape (EPO)

2 257/E23.017 (0 OR, 2 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES

257/E23.001 PACKAGING, INTERCONNECTS, AND MARKINGS FOR
 SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES (EPO)

257/E23.01 .Arrangements for conducting electric current
 to or from solid-state body in operation, e.g., leads,
 terminal arrangements (EPO)

257/E23.012 ..Consisting of lead-in layers inseparably
 applied to semiconductor body (EPO)

257/E23.017 ...Materials (EPO)

2 257/E23.054 (0 OR, 2 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES

257/E23.001 PACKAGING, INTERCONNECTS, AND MARKINGS FOR
 SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES (EPO)

257/E23.01 .Arrangements for conducting electric current
 to or from solid-state body in operation, e.g.,

leads,

terminal arrangements (EPO)
 257/E23.023 ..Consisting of soldered or bonded
 constructions (EPO)

257/E23.031 ...Lead frames or other flat leads (EPO)

257/E23.053Characterized by materials of lead frames
 or layers thereon (EPO)

257/E23.054Metallic layers on lead frames (EPO)

2 257/E23.065 (0 OR, 2 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES

257/E23.001 PACKAGING, INTERCONNECTS, AND MARKINGS FOR
 SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES (EPO)

257/E23.01 .Arrangements for conducting electric current
 to or from solid-state body in operation, e.g., leads,
 terminal arrangements (EPO)

257/E23.023 ..Consisting of soldered or bonded
 constructions (EPO)

257/E23.06 ...Leads, i.e., metallizations or lead frames
 on insulating substrates, e.g., chip carriers (EPO)

257/E23.065Flexible insulating substrates (EPO)

2 257/E23.067 (0 OR, 2 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES

257/E23.001 PACKAGING, INTERCONNECTS, AND MARKINGS FOR

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SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES (EPO)

- 257/E23.01 .Arrangements for conducting electric current to or from solid-state body in operation, e.g., leads, terminal arrangements (EPO)
- 257/E23.023 ..Consisting of soldered or bonded constructions (EPO)
- 257/E23.06 ...Leads, i.e., metallizations or lead frames on insulating substrates, e.g., chip carriers (EPO)
- 257/E23.067Via connections through substrates, e.g., pins going through substrate, coaxial cables (EPO)

2 257/E23.08 (0 OR, 2 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES

- 257/E23.079 ..For integrated circuit devices, e.g., power bus, number of leads (EPO)
- 257/E23.08 .Arrangements for cooling, heating, ventilating or temperature compensation; temperature-sensing arrangements (EPO)

2 257/E23.084 (0 OR, 2 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES

- 257/E23.079 ..For integrated circuit devices, e.g., power bus, number of leads (EPO)
- 257/E23.08 .Arrangements for cooling, heating, ventilating or temperature compensation; temperature-sensing arrangements (EPO)
- 257/E23.083 ..Mountings or securing means for detachable cooling or heating arrangements; fixed by friction, or springs (EPO)
- 257/E23.084 ...With bolts or screws (EPO)

plugs

2 257/E23.102 (0 OR, 2 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES

- 257/E23.079 ..For integrated circuit devices, e.g., power bus, number of leads (EPO)
- 257/E23.08 .Arrangements for cooling, heating, ventilating or temperature compensation; temperature-sensing arrangements (EPO)
- 257/E23.101 ..selection of materials, or shaping, to facilitate cooling or heating, e.g., heat sinks (EPO)
- 257/E23.102 ...Cooling facilitated by shape of device (EPO)

2 257/E23.105 (0 OR, 2 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES

- 257/E23.079 ..For integrated circuit devices, e.g., power bus, number of leads (EPO)
- 257/E23.08 .Arrangements for cooling, heating, ventilating or temperature compensation; temperature-sensing arrangements (EPO)
- 257/E23.101 ..selection of materials, or shaping, to facilitate cooling or heating, e.g., heat sinks (EPO)
- 257/E23.102 ...Cooling facilitated by shape of device (EPO)
- 257/E23.105Wire-like or pin-like cooling fins or heat sinks (EPO)

2 257/E23.109 (0 OR, 2 XR)

Class 257 : ACTIVE SOLID-STATE DEVICES

- 257/E23.079 ..For integrated circuit devices, e.g., power bus, number of leads (EPO)
- 257/E23.08 .Arrangements for cooling, heating, ventilating

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or temperature compensation; temperature-sensing
arrangements (EPO)

257/E23.101 ..selection of materials, or shaping, to
facilitate cooling or heating, e.g., heat sinks (EPO)

257/E23.106 ...Laminates or multilayers, e.g., direct bond
copper ceramic substrates (EPO)

257/E23.109Metallic materials (EPO)

2 257/E23.111 (0 OR, 2 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES

257/E23.079 ..For integrated circuit devices, e.g., power
bus, number of leads (EPO)

257/E23.08 .Arrangements for cooling, heating, ventilating
or temperature compensation; temperature-sensing
arrangements (EPO)

257/E23.101 ..selection of materials, or shaping, to
facilitate cooling or heating, e.g., heat sinks (EPO)

257/E23.11 ...Cooling facilitated by selection of
materials for device (or materials for thermal expansion
adaptation, e.g., carbon) (EPO)

257/E23.111Diamond (EPO)

2 257/E23.119 (0 OR, 2 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES

257/E23.113Ceramic materials or glass (EPO)

257/E23.116 .Encapsulations, e.g., encapsulating layers,
coatings, e.g., for protection (EPO)

257/E23.117 ..Characterized by material, e.g., carbon (EPO)

257/E23.119 ...Organic, e.g., plastic, epoxy (EPO)

2 257/E23.189 (0 OR, 2 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES

257/E23.176 ...For flat cards, e.g., credit cards (EPO)

257/E23.18 .Containers; seals (EPO)

257/E23.181 ..Characterized by shape of container or parts,
e.g., caps, walls (EPO)

257/E23.188 ...Container being hollow construction and
having insulating or insulated base as mounting for
semiconductor body (EPO)

257/E23.189Leads being parallel to base (EPO)

2 257/E25.023 (0 OR, 2 XR)
Class 257 : ACTIVE SOLID-STATE DEVICES

257/E25.001 ASSEMBLIES CONSISTING OF PLURALITY OF
INDIVIDUAL SEMICONDUCTOR OR OTHER SOLID-STATE DEVICES
(EPO)

257/E25.002 .All devices being of same type, e.g.,
assemblies of rectifier diodes (EPO)

257/E25.022 ..Devices having separate containers (EPO)

257/E25.023 ...Device consisting of plurality of
semiconductor or other solid-state devices or components
formed in or on common substrate, e.g., integrated
circuit device (EPO)

2 361/688 (0 OR, 2 XR)
Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES

361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE
ELECTRICAL COMPONENTS

361/679 .For electronic systems and devices

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361/688 ..With cooling means

2 361/690 (0 OR, 2 XR)
Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES

361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE
 ELECTRICAL COMPONENTS

361/679 ..For electronic systems and devices

361/688 ..With cooling means

361/689 ...Fluid

361/690 Air

2 361/695 (0 OR, 2 XR)
Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES

361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE
 ELECTRICAL COMPONENTS

361/679 ..For electronic systems and devices

361/688 ..With cooling means

361/689 ...Fluid

361/690 Air

361/694 With air circulating means

361/695 Fan or blower

2 361/700 (0 OR, 2 XR)
Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES

361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE
 ELECTRICAL COMPONENTS

361/679 ..For electronic systems and devices

361/688 ..With cooling means

361/689 ...Fluid

361/699 Liquid

361/700 Change of physical state

2 361/711 (0 OR, 2 XR)
Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES

361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE
 ELECTRICAL COMPONENTS

361/679 ..For electronic systems and devices

361/688 ..With cooling means

361/704 ...Thermal conduction

361/707 Through support means

361/709 Heat sink

361/711 Cooling plate or bar

2 361/776 (0 OR, 2 XR)
Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES

361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE
 ELECTRICAL COMPONENTS

361/679 ..For electronic systems and devices

361/748 ..Printed circuit board

361/760 ...Connection of components to board

361/772 With specific lead configuration

361/776 Flexible connecting lead

2 361/785 (0 OR, 2 XR)
Class 361 : ELECTRICITY: ELECTRICAL SYSTEMS AND DEVICES

361/600 HOUSING OR MOUNTING ASSEMBLIES WITH DIVERSE
 ELECTRICAL COMPONENTS

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361/679 .For electronic systems and devices
 361/748 ..Printed circuit board
 361/784 ...Plural
 361/785With separable connector or socket means

2 438/106 (1 OR, 1 XR)
 Class 438 : SEMICONDUCTOR DEVICE MANUFACTURING: PROCESS
 438/106 PACKAGING (E.G., WITH MOUNTING, ENCAPSULATING,
 ETC.) OR TREATMENT OF PACKAGED SEMICONDUCTOR

2 438/118 (1 OR, 1 XR)
 Class 438 : SEMICONDUCTOR DEVICE MANUFACTURING: PROCESS
 438/106 PACKAGING (E.G., WITH MOUNTING, ENCAPSULATING,
 ETC.) OR TREATMENT OF PACKAGED SEMICONDUCTOR
 438/118 .Including adhesive bonding step

2 438/122 (0 OR, 2 XR)
 Class 438 : SEMICONDUCTOR DEVICE MANUFACTURING: PROCESS
 438/106 PACKAGING (E.G., WITH MOUNTING, ENCAPSULATING,
 ETC.) OR TREATMENT OF PACKAGED SEMICONDUCTOR
 438/121 .Metallic housing or support
 438/122 ..Possessing thermal dissipation structure
 (i.e., heat sink)

2 438/124 (0 OR, 2 XR)
 Class 438 : SEMICONDUCTOR DEVICE MANUFACTURING: PROCESS
 438/106 PACKAGING (E.G., WITH MOUNTING, ENCAPSULATING,
 ETC.) OR TREATMENT OF PACKAGED SEMICONDUCTOR
 438/121 .Metallic housing or support
 438/124 ..And encapsulating

2 439/485 (0 OR, 2 XR)
 Class 439 : ELECTRICAL CONNECTORS
 439/485 WITH PROVISION TO DISSIPATE, REMOVE, OR BLOCK
 THE FLOW OF HEAT

2 439/73 (0 OR, 2 XR)
 Class 439 : ELECTRICAL CONNECTORS
 439/55 PREFORMED PANEL CIRCUIT ARRANGEMENT, E.G., PCB,
 ICM, DIP, CHIP, WAFER, ETC.
 439/65 .With provision to conduct electricity from
 panel circuit to another panel circuit
 439/68 ..Micro panel circuit arrangement, e.g., ICM,
 DIP, chip, wafer, etc.
 439/70 ...Dual inline package (DIP)
 439/73With external, contact enhancing clamp

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accompanying 2
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according 5
accordingly 1
accurately 1
achieve 1
ad 1
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adopted 1
advantages 1
after 3
against 1
age 1
aligned 1
all 1
also 3
an 6
and 67
another 1
any 1
ap 1
application 1
applications 1
applied 2
apply 1
are 19
area 9
around 4
art 1
as 8
associated 1
at 6
attach 3
attached 6
attaches 1
attaching 2
attachment 2
background 1
backside 5
be 7
because 1
been 2
before 2
benefit 1
between 6
bodiment 1
bond 1
bonded 1
bonding 12
bonds 2
both 3
brief 1
broadly 1
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but 1
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chip 67
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circuit 3
circuits 1
claimed 1
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complete 1
comprises 7
comprising 1
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conducting 1
conductive 1
connected 3
connecting 1
constitute 1
consuming 1
contact 2
contacts 3
conventional 1
conventionally 1
cooling 1
correspond 1
corresponding 3
correspondingly 1
corresponds 3
crease 1
cross 1
csp 1
curing 1
cutting 3
dca 1
de 2
december 1
derfill 1
described 1
description 7
design 2
detaching 1
detail 1
detailed 2
developed 1
diagram 1
diagrams 1
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die 5
different 1
direct 1
dis 1
disclosed 1
disposed 1
dissipating 1
dissipation 1
ditional 1
divided 1
drawings 5
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easy 1
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electrical 1
electrically 4

electronic 2
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embodiment 3
embodiments 2
enclose 1
enclosed 1
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explain 1
explanation 1
external 3
fabrication 3
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ferred 2
field 1
fig 6
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fills 1
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flip 1
following 2
for 12
foregoing 1
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formed 2
forming 2
from 4
further 2
furthermore 2
general 1
gether 1
glue 3
gluing 13
grated 1
guiding 4
hardly 1
has 2
have 1
having 1
heat 46
hence 4
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however 2
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ic 2
ieast 3
iike 1
illustrate 1
illustrated 1
im 1
improve 1
impurities 1
in 19
included 1
includes 2
including 1
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increase 4

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increasing 2
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integrated 2
integration 1
intended 1
intercommunicating 1
interference 1
into 2
invention 20
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level 1
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manufacturing 1
mask 1
matches 1
material 3
mcm 1
means 2
method 10
methods 1
module 1
moisture 1
molding 1
more 2
multi 1
namely 1
nected 1
need 1
no 2
normally 1
not 3
now 1
numbers 1
object 2
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one 6
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onto 1
operation 2
operations 1
or 1
other 3
over 2
overall 3
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package 25
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packaging 3
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part 1
particularly 1
parts 1
passing 1
path 1
pattern 3
per 1
planar 3
plary 1
plication 1
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plurality 5
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posing 1
position 2
positions 1
possible 1
pre 2
preferred 3
present 4
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pressure 1
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principles 1
printed 1
priority 1
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process 4
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producing 1
production 3
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productivity 1
protected 1
protrud 1
protruding 30
provide 3
provided 1
provides 3
purpose 1
quick 1
quickly 1
rality 1
rated 1
rcu 1
reduce 1
reduces 1
refer 1
reference 3
related 2
relates 2
required 1
ring 26
same 3
sawing 1
scale 1
scription 1
sec 3
second 14
section 26

sections 12
semiconductor 1
separately 1
serial 1
series 1
serve 1
set 6
shape 1
shorten 1
showing 3
shown 4
side 4
signals 1
since 2
sink 45
smaller 1
so 3
some 1
space 1
specification 1
spot 3
stage 3
stages 1
steps 1
stiff 2
stiffener 24
strate 1
strength 2
stress 1
structure 15
stylesheet 2
sub 1
substrate 14
summary 1
sur 1
surfaces 1
surrounding 1
taiwan 1
tape 7
technol 1
that 10
the 201
then 1
there 1
thereafter 3
thereby 1
therefore 2
thereof 4
thermal 1
these 1
they 1
this 11
three 1
through 2
tightly 1
time 2
tion 1
tions 1
to 56
together 3
top 2
transmission 1
truding 4

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underfill 1
understanding 1
understood 1
unit 1
up 2
used 3
using 1
variety 1
version 4
via 3
vices 1
vide 1
viding 1
view 5
wafer 4
well 1
when 1
wherever 1
which 1
while 3
widely 1
will 2
with 13
words 2
yield 1

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Most Frequently Occurring Classifications of Patents Returned
From A Search of 10605602 on May 11, 2005

Original Classifications

7 257/712
6 361/704
3 361/719
2 174/52.4
2 257/675
2 257/686
2 257/704
2 361/717

Cross-Reference Classifications

11 257/706
10 257/E23.092
8 257/778
7 257/717
6 165/185
6 257/707
6 257/E23.101
5 165/80.3
5 174/16.3
5 257/712
5 257/713
5 257/718
5 257/720
5 257/E23.055
5 257/E23.069
5 361/704
4 257/719
4 257/737
4 257/E23.086
4 257/E23.104
4 257/E23.106
4 257/E23.135
4 361/707
3 257/668
3 257/714
3 257/723
3 257/787
3 257/796
3 257/E21.504
3 257/E23.043
3 257/E23.124
3 257/E23.14
3 257/E23.181
3 257/E23.193
3 438/121
3 438/123
3 439/487
2 165/80.2
2 165/80.4
2 174/15.2
2 174/16.1
2 257/673
2 257/676
2 257/704
2 257/726
2 257/727
2 257/738
2 257/780

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2 257/E21.503
 2 257/E23.004
 2 257/E23.017
 2 257/E23.054
 2 257/E23.065
 2 257/E23.067
 2 257/E23.08
 2 257/E23.084
 2 257/E23.102
 2 257/E23.105
 2 257/E23.109
 2 257/E23.111
 2 257/E23.119
 2 257/E23.189
 2 257/E25.023
 2 361/688
 2 361/690
 2 361/695
 2 361/700
 2 361/711
 2 361/719
 2 361/776
 2 361/785
 2 438/122
 2 438/124
 2 439/485
 2 439/73

Combined Classifications

12 257/706
 12 257/712
 11 361/704
 10 257/E23.092
 9 257/778
 8 257/717
 6 165/185
 6 257/707
 6 257/E23.101
 5 165/80.3
 5 174/16.3
 5 257/713
 5 257/718
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 5 257/E23.069
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 4 438/123
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 3 257/714
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 3 257/E23.181
 3 257/E23.193
 3 361/717
 3 439/487
 2 165/80.2
 2 165/80.4
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